Natural Sciences 102 -- Spring 2005

Homework #6, May 3, 2005
Due in class May 10, 2005

1. The distance ladder:

In no more than one page, describe the steps on the cosmological distance ladder. Start with the radius of Earth, and end with the most distant objects we see. For each step, be sure to say exactly what is measured. For each step, describe what is used from the previous step.

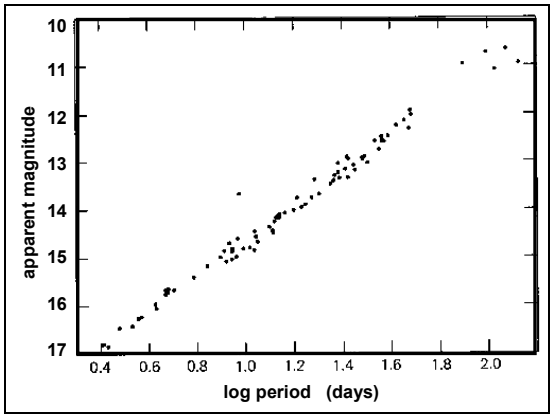
2. Hertzsprung-Russell: (Please show your work.)

Last night my assistant (I don't do telescopes; I have people for that) discovered a globular cluster (named Rocky-II) in our galaxy, but it is too far away to detect a parallax.

a) What observations will my assistant have to do to establish the H-R diagram for Rocky-II?
b) How will the H-R diagram for Rocky-II be used to determine its distance?

3. Distances: (Please show your work.)

A Cepheid is discovered in the galaxy M137 with a period of 10 days and an apparent magnitude of m=20. Using the information about Cepheids in the LMC (distance 50 kpc) shown in the graph below, estimate the distance to M137.



News of the week

- The class website is: http://home.fnal.gov/~rocky/NS102/.
- This week's laboratory is "Geometry of the Universe."
- May's reading assignment is Kolb, Chapters 6-11.